Chemistry Laboratory

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Director

The Chemistry Division operates as a service for various divisions within the Department of Agriculture and Food. The division laboratories provide chemical, physical, and microbiological analyses. All samples analyzed in the laboratories are collected and forwarded by various field inspection personnel from the divisions of Plant Industry, Regulatory Service, Animal Health, and Marketing and Conservation Programs.

Feed, fertilizer, meat products, and pesticide formulation are tested for specific ingredients as stated by the associated label guarantee. Some products are also examined for the presence of undesirable materials, such as filth, insects, rodent contamination, adulterants, inferior products, and pesticide residues.

The Dairy Testing Laboratory is responsible for testing grade A raw milk, finished dairy products, and administers an industry laboratory certification program. The laboratory is certified by FDA to perform the following tests: standard plate and coliform counts; microscopic and electric somatic cell determinations; antibiotic residues, and proper pasteurization. The laboratory is also certified as the FDA Central Milk Laboratory for the State of Utah, and our supervisor serves as the State Milk Laboratory Evaluation Officer (LEO) which has jurisdiction over the certified milk labs within the State. Last year there are 23 facilities with 120 analysts under the LEO's jurisdiction. The LEO is responsible for on-site evaluation and training of all certified analysts throughout the State and along with the dairy laboratory staff, and administers a yearly proficiency testing program for all industry analysts. The laboratory works closely with the division of Regulatory Services inspectors to ensure safe and wholesome products.

The Meat Laboratory analyzes meat and meat product samples obtained during inspections of plant and processing facilities that conform to Federal and State standards. Tests are performed to measure fat, moisture, protein, sulfites, and added non-meat products to ensure label compliance of these products. Antibiotic residues and cross-contamination from other species are also monitored. We also analyze samples from Montana Department of Agriculture when requested. Samples (meat and carcass swabs) from processing facilities are also tested for the presence of Salmonella on a monthly basis.

The Pesticide Formulation Laboratory's function is testing herbicides, insecticides, rodenticides, and fungicides to ensure that the listing of active ingredients and their concentrations are in compliance with state labeling laws. The Pesticide Residue Laboratory tests for presence and subsequent levels of herbicide, insecticide, rodenticide, and fungicide residues in plants, fruits, vegetables, soil, water, and milk products. These samples are submitted when inspectors suspect there may be a misuse of the application of the pesticide. Milk samples are tested once a year to for pesticide contamination in accordance with FDA regulations.

Commercial feed (agricultural and pet) samples are tested for moisture, protein, fat, fiber, minerals, toxins, antibiotics, and vitamins in the Feed Laboratory. Seed moisture determinations are also performed for the State Seed Laboratory. The Fertilizer Laboratory tests solid and liquid fertilizer samples for nitrogen, phosphorus, potassium, and trace elements, and heavy metals. All feed and fertilizer results are compared to label guarantees to ensure compliance with state labeling laws.

Special Consumer Complaint Samples are also examined for the presence of undesirable materials such as filth, insects, rodent contamination and adulterations. The samples are checked to verify validity of complaint, and if found positive, the matter is turned over to departmental Compliance Officers for follow up action.

Ground and Surface Waters are monitored for the presence for pesticides, nitrates, heavy metals and other inorganic elements, in addition to other water quality related parameters. This data is combined with other water data collected in the field to provide a picture on the quality of the state aquifers and develop water vulnerability studies.

Accomplishments

As shown in the accompanying table, this year's numbers of tests were similar to the previous year. The large increase in groundwater tests were due to more well owners expressing an interest in knowing the condition of their water. This water is mainly used for irrigation and livestock, however in some instances this water is also used for culinary purposes. We continue to provide a monitoring program for food safety and partner with the FDA eLEXNET system by providing salmonella, pesticide, and heavy metal test results.

The dairy laboratory completed their tri-annual on-site FDA audit with no deficiencies noted. We also hired a new microbiologist to replace a retiring employee. The new employee successfully completed all the required tests. Currently, there are twenty-two (22) facilities with 134 analysts under the LEO's jurisdiction. The steady increase in dairy tests is due increased demand from the Regulatory Division to monitor raw milk and ice cream quality.

The division purchased an ICP-MS to help monitor for heavy metals in fertilizers and ground water.

Fee schedule has been finalized so the division can start performing tests on non-regulatory samples.

No pesticides have been detected in dairy producer samples collected last year and the ground water samples have shown the same results.

Meetings with chemists and supervisors from the different divisions continue to be held to discuss status of ongoing programs, problems that are arising, new program needs, or budgetary changes.

	2002	2003	2004
Federal Meat	423	255	262
State Meat	1,058	1,146	1,113
Montana Meat Samples	122	85	25
Dairy Microbiology	8,846	9,588	10,244
Fertilizer	739	645	734
Feed	1,491	1,407	1,201
Pesticide Formulation	9	11	39
Pesticide Residue	29	18	30
Special Samples	81	35	22
State Groundwater	31,029	23,682	40,160
Pesticide Residue in Milk	2,850	11,670	2,320
Salmonella	162	308	239
TOTAL	46,839	48,850	56,389

In addition to the above analytical work, the staff typically performs anywhere from 5000-7000 determinations related to quality control procedures.

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